## ABSTRACT OF THE DISCLOSURE

Disclosed is a digital certificate issuing system with intrusion tolerance ability and the issuing method thereof. The system comprises a task distributor, k calculators, m combiners and a sub-secret-key distributor. The processing of distributing a private key of a Certificate Authority comprises the steps of: the sub-secret-key distributor expressing a private key d as a sum of t sub-secret-keys di and one sub-secret-key ca, and t < k; the distributor distributing kxl random numbers di into i di per calculator and sends them to k calculators, obtaining a set of  $c_{\alpha}$  and their equation combination representations and sending them to m combiners for pre-storage according to the combiner security condition. The processing of issuing certificate comprises the steps of: the task distributor sending the certificate to be signed to k calculators, the calculators computing ascending power  $\mathbf{M}^{d_{ji}}$ ; sending i computation results to combiners and the combiners comparing them with pre-stored equation combination representations of ca, finding out a matched equation combination representation and obtaining corresponding  $c_{a},$  and based on R obtained through multiplying  $\, {M}^{d_{\mu}},$  then computing  $M^{c_*}$ , obtaining a digital signature S=Md, finally generating a certificate.